



In-house Applications Remediation

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Applications



- Not just mainframe systems
- Not just large systems
- Spreadsheets, user apps, legacy apps
- Single- or multi-user
- Any daily process

Process



- Remediate underlying package
- Inventory
 - Y2K scanning tools
- Determine scope
 - Data exchange
- Test

Process



- Prioritize
 - Criticality
 - Failure impact
 - Vulnerability window
 - Process alternatives

Options



- **Do Nothing**
 - No dates
 - Date impact has little or no impact
 - Small impact window

Options



- **Abandon**
 - Current status
 - Expected application lifetime
 - Alternative availability
 - Business impact

Options



- **Remediate**
 - Cost (money & resources)
 - Expected application lifetime
 - Short-term solution pending long-term alternative

Options



- **Replace**
 - Cost (money, resources, other)
 - Expected application lifetime
 - Expected replacement development time
 - COTS or tailored
 - Retraining/user impact

Options



- **Decision**
 - Impact ranking
 - Deadline
 - Resource (people & expertise) availability
 - Source code availability
 - Cost
 - Fallback options

Options



- **All factors affect Y2K priority**
- **Opportunity for process improvement**

Five areas



- Data storage
- Date entry (including data exchange)
- Date output (including data exchange)
- Date computations
- Date sorting/comparisons

Applications

Slide 10

Data Storage



- Most DATE fields need no changes
- CHAR and NUMBER formats may
- Look for embedded year usage in fields (e.g., YYQQ or FY)

Applications

Slide 11

Data Storage



- Recommend ALL date storage be remediated
 - ▶ Pros
 - Indexing, other internal functions
 - Flexibility in code changes
 - ▶ Cons
 - Requires conversion process
 - Single point implementation

Applications

Slide 12

Date Entry



- Screen redesign
- Input file format
- External database access
- Preprinted input forms

Date Output



- Report redesign
- Output file format
- External database access
- Preprinted/hardcoded output forms

Date Computations



- Cross-century math
- Cross-leap year math
(2000 is a leap year)
- Day of the Year (DOY) math
- Day of the Week (DOW) math

Date Conversions



- Date-to-Character
- Character-to-Date
- Date-to-Ordinal

Date Comparisons



- Indexes/sorting
- Data verification (bounds checking)
- Data limits (9/9/99, 12/31/99, "00" = unknown year)

Remediation Methods



- Convert to "YYYY" format
- Implement date windowing
- Can be a combination

Method Selection



- Ultimate application date window
- Available resources
- Impact on historical (archive) data
- Ambiguity potential
- Expected application lifetime

"YYYY" Format



- Pros
 - Only complete, long-term solution
 - Eliminates all potential for ambiguity

"YYYY" Format



- Cons
 - Record reformatting (disk space)
 - Screen redesign (input impact)
 - Report redesign
 - Data exchange redesign

"YYYY" Format



- **Cons (cont.)**
 - More code changes, increased testing
 - No phase-in

Windowing



A method for converting 2-digit years to 4-digit years based on a "pivot" year.

Example Windows



- **Lotus 1-2-3**
 - 1900-1999
- **Excel**
 - 1920-2019 (Excel 5, 95)
 - 1930-2029 (Excel 97)

Windowing



- **Pros**
 - Easier remediation
 - Less design impact

Windowing



- **Cons**
 - Short-term solution
 - 100-year date window only
 - Continuing maintenance
 - Ambiguity potential
 - Data exchange synchronization

Code Review



- **Scanners**
- **Check data structures**
- **Search source for field names**
- **Search source for commands/functions with date potential**
- **98% fix**

Other Applications



- **Spreadsheets (Excel)**
 - Column widths
 - Output format
 - Short Date Format

Data Exchange



- **Data fields, ASCII files, function parameters, shared data areas**
- **Establish date parameters**
- **Coordinate testing**
- **Test both ways**
- **Coordinate implementation**

Data Exchange



- **Manifestations**
 - Date format
 - Date value
 - Record selection

Data Exchange



- **Bridge Programs**
 - Other remediation out of your control
 - Allows staggered implementation
 - Allows mix of Full and Windowing solutions
 - Short term solution

Recommendations



- **Start to focus on small applications**
- **Get an inventory**
- **Prioritize and start NOW**

Recommendations



- **Remediate COTS basis**
- **Set data structure/exchange elements for "YYYY" format for long-term programs**
- **Set Short Date to "YYYY"**
- **Inform and train users**